*Amendola Engineering, Inc.*
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**Indiana Harbor Ship Canal**
**ArcelorMittal Indiana Harbor LLC**
**Central Wastewater Treatment Plant – Outfall 001**

**Occurrence and Distribution of Oil Sheens**

*ArcelorMittal initial draft, to be edited upon review of data from EPA and USCG that have been requested.*

## 1.0 Introduction and Background

- Brief summary of recent history – 2017
- Findings to date – based on ArcelorMittal, EPA and USCG investigations and data
- Why more studies – requests from EPA, USCG
- The study area includes:
    - Indiana Harbor Ship Canal (IHSC) upstream of dredged area and upstream and downstream of IHCWTP Outfall 001
    - Lake George Canal (LGC)
    - ArcelorMittal IH CWTP Outfall 001 and tributary sewer systems

## 2.0 Scientific Objectives

- Characterize oil sheens on the IHSC, LGC and oils in sediments in the IHSC and LGC, as follows:
    - Total Petroleum Hydrocarbons (TPH) quantitation and fingerprinting (modified EPA Method 8015D)
    - Polynuclear Aromatic Hydrocarbon (PAH) quantitation and fingerprinting (modified EPA Method 8270)
    - Quantitative biomarker fingerprinting, as may be determined necessary (EPA Method 8270)
- Using the analytical methods noted above, characterize sediments and oils sheens as may be present at or near ArcelorMittal IH CWTP Outfall 001 as well as identified internal sewer system sediment and oil sheen samples, and possible IH CWTP oil source samples (e.g., IH CWTP Outfall 101 process water treatment system).

- To the extent possible with data generated from this study, determine whether and to what extent oil sheens observed on the Indiana Harbor Ship Canal near IH CWTP Outfall 001 are attributable to upstream sewer system sources, legacy deposits of oil in background samples and/or ArcelorMittal discharges.

## 3.0 Study Design

**Field Program – Indiana Harbor Ship Canal and Lake George Canal**

Sediment Samples. Because surface sediments are likely to give rise to oil sheens observed on the IHSC, surface sediment samples (approximately 0 to 6') will be collected from a boat with a Ponar dredge or other suitable sampling device at the following locations (see Figures 1 and 2). Two sediment samples will be collected across a transect at each sediment sampling location, each approximately one-third of the distance from each bank. The samples collected at each location will be analyzed separately as described above.

| Sample Station ID | Description |
|---|---|
| IHSC-1 | Indiana Harbor Ship Canal<br>~ 100 yards upstream of southernmost dredged section |
| LGC -1 | Lake George Channel<br>~ 150 yards downstream of Indianapolis Boulevard |
| IHSC-2 | IHSC<br>~ 200 yards upstream of IH CWTP Outfall 001 Canal Street |
| IHSC-3 | IHSC<br>~ 100 yards downstream of IH CWTP Outfall 001 |
| IH CWTP-1 | IH CWTP at Outfall 001<br>~ in the immediate vicinity of IH CWTP Outfall 001 |

Oil Sheen Samples. IHSC and LGC oil sheen samples will be collected at or near the above-listed sediment sample locations and identified bridges to the extent oil sheens are visible. Oil sheen samples will be collected from a boat with Teflon mesh samplers deployed on a pole sampler. The field crew will have the flexibility to collect oil sheen samples at their discretion, with the following principal objectives:

- Collect one oil sheen sample at or near each of the above sediment sample locations to the extent oil sheens are present. Sample locations to be documented with GPS coordinates.

- Collect additional oil sheen samples at locations upstream and downstream of IH CWTP Outfall 001 to the extent oil sheens are present. Sampling of the heaviest oil sheens is preferred.

**Field Program – ArcelorMittal Facilities**

Outfall Sampling. Oil sheen samples will be obtained in the IHSC at or near IH CWTP Outfall 001, to the extent oil sheens are present. Outfall 001 oil sheen samples will be collected on two separate days during the week when the IHSC sediment and oil sheen sampling program is conducted. Upon collection of oil sheen samples, the following will be noted:

- If the oil sheens appear to originate from the IHSC (surface, sediment), or ArcelorMittal IH CWTP Outfall 001;
- If there are any visible sheen in the near field immediately upstream at the time of sample collection, and if so, a sample would be collected;
- If the sheens were observed to leave the area where observed.

Internal Sewer System and Source Oil Sampling. Scope to be determined. Possible sample locations:

- IH CWTP sewer system upstream of IH CWTP and USS ECTO inputs (i.e., off-site sources)
- IH CWTP oil at Outfall 101 treatment system
- IH CWTP Outfall 001 outfall inside steel weir
- IH CWTP Outfall 001 just outside steel weir
- Middle of IHSC adjacent to Outfall 001

## 4.0 Reports

- Separate reports will be prepared for IH CWTP (Outfall 001) and IH West (Outfalls 009 and 010) drawing on common IHSC background/upstream data and findings, as appropriate:
- Executive summaries with principal findings
- Summary reports of field sampling program and field observations
- Detailed third-party assessments by NewFields using TPH, PAH and possibly biomarker fingerprinting described above.
- Comparison of study results with observations and data developed by the EPA and USGC
- Overall findings and conclusions
- Appendices will include summaries of recent (2017) ArcelorMittal investigations, historical data and findings; field and analytical reports from this study; and, information and data provided by EPA and the USGC.

**FIGURE 1**

**DRAFT WORK PLAN OUTLINE**
**ARCELORMITTAL IH CWTP 001**

**SEDIMENT SAMPLING LOCATIONS AND ARCELORMITTAL INDIANA HARBOR OUTFALL LOCATIONS**


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